ALBERTA OIL SANDS INDUSTRY

QUARTERLY UPDATE

SPRING 2011

Reporting on the period Dec. 14, 2010 to Mor. 4, 2011

Government of Alberta

All about the oil sands

Background of an important global resource



TABLE OF CONTENTS

02 All about the oil sands

Background of an important global

2 Mapping the oil sands

04 Government update

06 NEWS: What's new in the oil sands Key updates from spring 2011

Project listings
Updated status of oil sands
projects in Alberta

Glossary of oil sands terms

All photos © 2011, JuneWorren-Nickle's Energy Group Alberta has the third largest deposit of oil in the world, next to Saudi Arabia and Venezuela. But 170 billion of Alberta's 179 billion barrels of oil have the special quality of being bitumen, a resource that has been developed for decades but is only now coming into the forefront of the global energy industry, as conventional supplies — so-called "easy" oil — continue to be depleted. The figure of 170 billion barrels represents what is considered economically recoverable with today's technology, but with new technologies, this reserve estimate could be increased to as much as 315 billion barrels.

There are three major bitumen (or. oil sands) deposits in Alberta. The largest is the Athabasca deposit, located in the province's northeast in the Regional Municipality of Wood Buffalo. The main population centre of the Athabasca deposit is the City of Fort McMurray. The second-largest oil sands deposit is referred to as Cold Lake, just south of Athabasca, with the main population centre the City of Cold Lake. The smallest oil sands deposit is known as Peace River, which is located in northwest central Alberta. A fourth deposit called Wabasca links to the Athabasca and is generally lumped in with that area.

The existence of bitumen in Alberta has been known for a long time. The first mention of it in Canadian history was in 1719, when a Cree named Wapasu brought a sample of the "gum" to a Hudson's Bay trading post. First Nations in what is now the Wood Buffalo area had traditionally used the bitumen, which seeps from outcrops along the Athabasca River, to waterproof their canoes.

Today bitumen is produced as an energy source by two means — mining and in situ. The majority of oil sands production is done by surface mining, but this will likely change in the future, as 80 per cent of Alberta's bitumen

deposits are too deep underground to economically employ this technology.

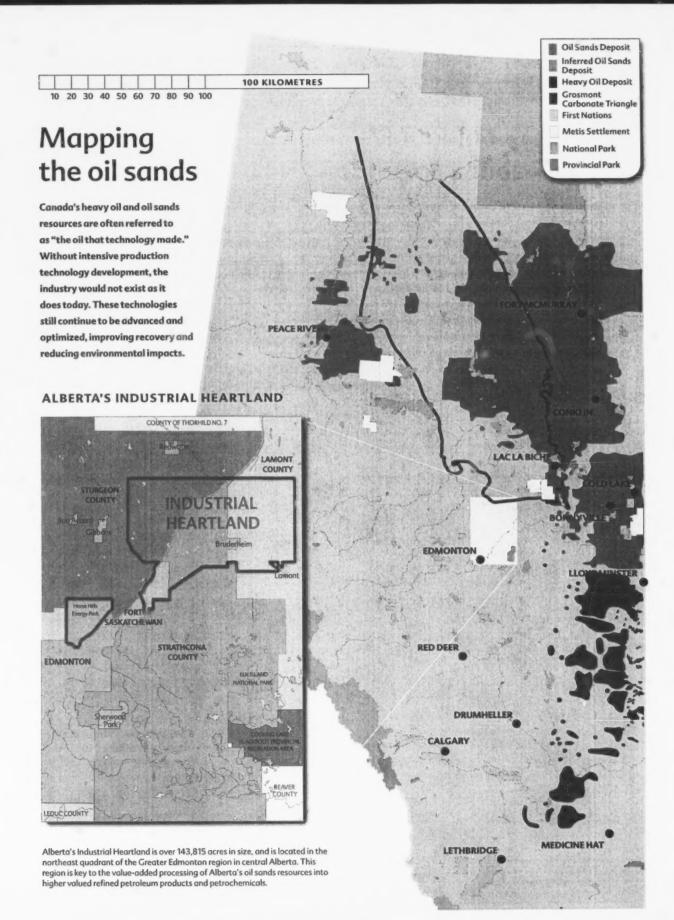
Right now there are essentially two commercial methods of in situ (Latin for "in place," essentially meaning wells are used rather than trucks and shovels). In cyclic steam stimulation (CSS), high-pressure steam is injected into directional wells drilled from pads for a period of time, then the steam is left to soak in the reservoir for a period, melting the bitumen, and then the same wells are switched into production mode, bringing the bitumen to the surface.

In steam assisted gravity drainage (SACD), parallel horizontal well pairs are drilled from well pads at the surface One is drilled near the top of the target reservoir, while the other is drilled near its bottom. Steam is injected into the top well, a steam chamber forms, and via gravity, the melted bitumen flows into the lower well and is pumped to the surface using artificial lift.

Both SAGD and CSS are used in the Cold Lake and Peace River deposits, while SAGD is the in situ technology of choice in the Athabasca deposit. The choice is based on a number of things including geology. The technologies combined currently produce just over one million barrels per day.

Research is underway on a number of other production technologies designed to optimize production and minimize water and energy use, including vapour extraction (VAPEX), and a form of in situ combustion known as toe to heel air injection (THAI).

Bitumen that has not been processed, or "upgraded," can be used directly as asphalt. It must be diluted to travel by pipeline. Adding value, some producers upgrade their product into synthetic crude oil (SCO), which is a refinery feedstock. At these refineries it can be transformed into transportation fuels and other products.



Government update



BITUMEN REFINERY AGREEMENT PROMOTES VALUE-ADDED DEVELOPMENT

The Alberta government has successfully negotiated contracts for two projects that will advance upgrading and refining of bitumen in Alberta, increase supplies of diesel fuel and enhance Alberta's position as a secure supplier of clean energy. The first project with the North West Upgrading Inc./Canadian Natural Resources Limited partnership will lead to construction of a new bitumen refinery in Alberta's Industrial Heartland, northeast of Edmonton, as part of the government's Bitumen Royalty in-Kind initiative. Construction of Phase 1 of the bitumen refinery is targeted for completion in mid-2014. It will process 37,500 barrels per day of Crown bitumen for market, in addition to 12,500 barrels per day of bitumen from Canadian Natural. During this first stage, the refinery will produce more than 5.5 million litres per day of ultra-low sulphur diesel while capturing over three thousand tonnes of CO2 per day.

For the second project, the Alberta government and Enhance Energy Inc. have agreed to terms and conditions specific to the first major carbon capture and storage project in the province. Enhance will build the Alberta Carbon Trunk Line (ACTL), a pipeline that will deliver CO_2 captured from the North West Upgrading refinery and from Agrium Inc., to be used for enhanced oil recovery in existing conventional oilfields. Enhance Energy will transport the CO_2 via the 240-kilometre ACTL pipeline to conventional oil recovery projects throughout central Alberta, where it will be injected into oil reservoirs to make the oil flow more freely.

The two projects will create about 10,000 jobs during construction, plus associated spinoff employment.

GOVERNMENT EXAMINING WAYS TO STRENGTHEN ALBERTA'S PETROCHEMICAL INDUSTRY

Discussions continue between the provincial government and Alberta's petrochemical industry to see if changes to the Incremental Ethane Extraction Program could be made to diversify sources of ethane supply and promote further development of value-added industry in Alberta.

One potential change is to encourage the use of off-gas ethane, which is a by-product of bitumen refining or upgrading. This alternative source of ethane feedstock would help sustain Alberta's petrochemical industry, and at the same time, has the potential to reduce oil sands emissions by up to one million tonnes annually.

Alberta's petrochemical industry depends on ongoing availability of competitively priced ethane to remain viable. Ethane, which is a component of natural gas, is extracted and used as a feedstock in petrochemical production.

Alberta's petrochemical industry is the largest in Canada with annual shipments of almost \$9.2 billion and exports of more than \$5.4 billion in 2009. The sector employs 7,500 Albertans and helps diversify the labour market as well as add value to Alberta's economy.

ALBERTA TO BETTER INTEGRATE OIL AND GAS POLICY AND REGULATORY SYSTEM

The task force established to review Albertu's regulatory system released a report that highlights coordinated policy development and an integrated regulatory system for upstream oil and gas. The task force report and recommendations include:

- Establishing a new policy management office and ensuring integration of natural resource policies;
- Creating a single oil and gas regulatory body;
- Providing clear public engagement processes;
- Using a common approach to risk assessment and management;
- Adopting performance measures to enable continuous system improvement; and
- Creating a mechanism to help resolve disputes between landowners and companies, and enforce agreements where required.

The review included analyses of all processes in place to develop and ensure compliance with provincial policies around upstream oil and gas development, and extensive engagement of First Nations, the oil and gas industry, and individuals from landowner, municipal and environmental groups. Between March 31 and Oct. 1, 2010, the task force hosted three rounds of engagement through a series of briefings, meetings, workshops and a forum.

The task force was established in March 2010 to lead a comprehensive upstream oil and gas regulatory review and make recommendations to ensure



Alberta has a modern, efficient, outcomes-based and competitive regulatory system that maintains the province's strong commitment to environmental management, public safety and resource conservation. The report and supporting documents are available at www.energy.alberta.ca/Initiatives/ RegulatoryEnhancement.asp.

EXPERTS SELECTED TO LEAD OIL SANDS MONITORING

Twelve independent experts from across North America have been chosen to help create a world-class environmental monitoring system for Alberta's oil sands.

Hal Kvisle and Howard Tennant are co-chairs leading the panel. Kvisle is the former president and chief executive officer of TransCanada Corporation, while Tennant is the former president and vice-chancellor of the University of Lethbridge. The remaining panel members represent a broad range of expertise from the scientific, academic, public administration, regulatory and health fields.

Recommendations will be provided for a first-rate environmental monitoring system in northeastern Alberta that spans across all areas—air, land, water and biodiversity—and how such a system can expand throughout the province. The experts will also take into account the work and findings of the federal oil sands advisory panel, the joint government team now examining surface water-quality monitoring and the provincial data review. The panel will report back to the minister of environment by June 2011.

ERCB ADDRESSES STATEMENTS IN NATURAL RESOURCES DEFENSE COUNCIL PIPELINE SAFETY REPORT

The Energy Resources Conservation Board (ERCB) is concerned that a report on pipeline safety issued in February by the Natural Resources Defense Council (NRDC) contains misleading statements on pipeline safety in Alberta and on the characteristics of diluted bitumen. The study includes incorrect statements about pipeline safety in Alberta, including: "The Alberta hazardous liquid pipeline system has a relatively high

rate of pipeline failure posing an early indication of the risks dilbit poses to pipeline integrity," and:

"Despite its relatively recent construction, Alberta's hazardous liquid system, which carries a high proportion of diluted bitumen, had over four times as many reportable incidents per mile as the older U.S. system between 1990 and 2005."

These statements are inaccurate. The NRDC's comparison of ERCB data with that collected in the United States is flawed, as it selected data from a much broader array of ERCB pipelines than those included in U.S. data as hazardous liquid pipelines. Additionally, the NRDC did not recognize that the ERCB requires all incidents to be reported, regardless of whether or not any product is spilled, and also regardless of spill volume, whereas in the United States only spills of five barrels of liquids or more are required to be reported.

This results in a misleading comparison of pipeline failure numbers between the United States and Alberta. In the category identified by NRDCpipelines shipping bitumen and blends of bitumenthe ERCB can identify only three spills resulting from internal corrosion between 1990 and 2005 (and only eight from 1975 to 2010). The resulting average failure frequency for the grouping of crude oil pipelines from 1990 to 2005 is thus 0.03 per 1,000 kilometres per year. This is significantly lower than the U.S. rate quoted in the NRDC study of 0.08 per 1,000 kilometres per year.

The report also states, "There are many indications that dilbit is significantly more corrosive to pipeline systems than conventional crude." Analysis of pipeline failure statistics in Alberta has not identified any significant differences in failure frequency between pipelines handling conventional crude versus pipelines carrying crude bitumen, crude oil or synthetic crude oil. It should also be emphasized that pipelines in Alberta have never been safer. In 2009, Alberta posted a record-low pipeline failure rate of 1.7 pipeline failures per 1,000 kilometres of pipeline (considering all substances), improving the previous record low of 2.1 set in both 2008 and 2007.



What's new in the oil sands

Key updates from spring 2011



III Canadian Natural Resources Limited says preliminary target timelines indicate that following a major fire in January, the first set of coke drums at its Horizon mining and upgrading project should resume production in the second quarter of 2011, enabling on-stream production of about half plant capacity or 55.000 barrels per day of synthetic crude oil.

The second set of coke drums are targeted to be on production in the third quarter of this year. All production restarts will be commissioned for service after all required regulatory reviews are complete.

The fire occurred at approximately 3:30 p.m. on January 5 at the top of coke drum 1B (one of four coke drums used on the Horizon site numbered 1A, 1B, 2A and 2B), an area commonly referred to as the cutting deck. The fire burned for approximately three hours and 45 minutes and was allowed to burn itself out, which is the safest way to manage this type of fire, according to Canadian Natural. Five employees were injured.

III Labour shortages and inflationary pressures shouldn't be as severe for the oil sands sector as they were during the boom five years ago due to fewer players and less competition from the natural gas side, according to the head of Cenovus Energy Inc.

Brian Ferguson, president and chief executive officer, told a recent Credit Suisse Energy Summit in Vail, Colo., that there's still potential, with stronger oil prices and a recognition of the value of the oil sands, to see higher activity and some congestion.

"[But] there's a number of things that are quite different [this time]," he said, adding that maintaining cost discipline and using a manufacturing approach will be important. "We're certainly not forecasting the kinds of peaks that we saw in terms of labour or other projects. There's a much fewer number of oil sands players. We don't have a period where we had several mining projects trying to come on stream at the same time.... Industry has evolved much more to the [in situ] model where there is much more phased growth, and we also don't have the same competition for capital and for labour from natural gas that we had in the past."

III SilverBirch Energy Corporation has announced an increase to its contingent bitumen resource estimates following an independent review attributable to its major mining projects, Frontier and Equinox. Sproule Unconventional Limited has prepared an independent opinion of the contingent bitumen resources of SilverBirch effective as of Dec. 31, 2010. Sproule's

work on the Frontier and Equinox projects included a geological evaluation and a technical review of the mine, tailings and extraction plans.

The best-estimate contingent bitumen resource has increased to 2.45 billion barrels for the Frontier project, from 1.45 billion barrels, and to 375 million barrels from 330 million barrels for the Equinox project.

IIII Aecon Group Inc. has announced that change order negotiations on Suncor Energy Inc.'s Firebag Stage 3 central plant facilities (CPF) project will result in significant losses.

While negotiations have not yet concluded, total operating losses on the project will be in the \$56 million to \$59 million range (\$40 million to \$42 million after tax), leading to an operating loss in Aecon's industrial segment for the year ended Dec. 31, 2010.

Aecon turned over the Firebag Stage 3 CPF project to Suncor at 2010 year end, and assisted Suncor with transitioning from completing construction to precommissioning mode. As such, the impact of project losses is limited to the 2010 fiscal year, and will not affect Aecon's financial results in 2011.

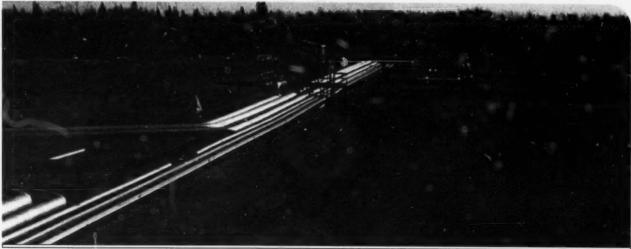
III Laricina Energy Ltd. has begun injecting steam into the Grosmont carbonate formation at its Saleski pilot project in northern Alberta.

The company believes the pilot, which has an approved capacity of up to 1,800 barrels a day, is the world's first steam assisted gravity drainage project in the Grosmont carbonate formation, one of Alberta's largest in situ bitumen resources.

Other pilots were done in the northern Alberta bitumen carbonates in the 1970s and 1980s using cyclic steam stimulation. But at the time oil prices were too low and steam-assisted bitumen recovery was in its early days.

IIII Athabasca Oil Sands Corp. says its subsidiary,
Dover Operating Corp., has submitted the application
to the regulatory authorities for Athabasca Oil Sands'
40 per cent owned Dover commercial project, 70
kilometres northwest of Fort McMurray, Alta.

Athabasca Oil Sands has set a target to become one of the leading in situ bitumen producers. To help achieve this ambitious goal, the board of directors approved a 2011 annual capital budget of \$302 million (net) to execute its exploration and development program, including purchasing certain long-lead items for the Hangingstone project, thermal assisted gravity drainage and SAGD testing



of the Dover West carbonates, drilling up to 140 wells. acquiring up to 60 square kilometres of 3-D seismic and acquiring up to 130 kilometres of 2-D seismic.

During the next 15 months, the company also expects to hire 100 new employees to expand its technical and operating capabilities.

- III Seven oil sands mining companies have announced that they plan to work together in a unified effort to advance tailings management and to foster innovation and collaboration in research and development relating to tailings. The announcement was made by Canadian Natural Resources Limited. Imperial Oil, Shell Canada Limited, Suncor Energy Inc., Syncrude Canada Ltd., Teck Resources Limited and Total E&P Canada Ltd. Each company has pledged to share its existing tailings research and technology and to remove barriers to collaborating on future tailings research and development. The collaboration is supported by the Canada Mining Innovation Council, an organization focused on the promotion and implementation of mining-related research to meet the needs of Canada's mining and minerals industries. The companies have agreed to the following core principles to guide the actions of the research collaboration:
- · Make tailings technical information more broadly available to the industry members, academia. regulators and others interested in collaborating on tailings solutions:
- · Collaborate on tailings-related research and development and technology among companies as well as with research agencies;
- · Eliminate monetary and intellectual property barriers to the use of knowledge and methods related to tailings technology and research and development; and
- · Work to develop an appropriate framework so that tailings information is organized, verified through peer review and kept current.

Existing tailings research and development will form the base of knowledge for the collaboration. Research objectives will be finalized in 2011.

- III MEG Energy Corp. has begun horizontal drilling at Phase 2B of its Christina Lake steam assisted gravity drainage (SAGD) project. The final cost estimate of \$1.4 billion has been approved by company directors. MEG plans to invest about \$900 million in 2011, when it will start facilities construction. That's up from a 2010 capital budget is \$629 million, Bill McCaffrey, chairman, president and chief executive officer, says, "Phase 2B is an important step in implementing our strategy of having production capability of 260,000 barrels per day by 2020."
- IIII Shepherding the Clearwater West Phase 1 pilot project application through the regulatory process. beginning detailed engineering and securing funding for the SAGD project will be Alberta Oilsands Inc.'s focus in 2011. The company expects to receive regulatory approval in 2011 and will have to raise approximately \$100 million in capital to complete the first phase's construction and commissioning. Alberta Oilsands anticipates financing its capital requirements through a combination of joint venture, debt and/or equity arrangements and asset rationalizations.
- IIII Syncrude Canada is conducting its own investigation into the death of a contractor, suspected to have fallen, at a construction site at its Mildred Lake upgrader near Fort McMurray, Alta. On December 1 at about 11:30 a.m., Syncrude's emergency crews found the man unresponsive and pronounced him dead at the scene, says spokeswoman Cheryl Robb. Occupational Health and Safety and RCMP have also been investigating. Syncrude is not releasing any personal details. Says Robb, "It appears it was a fall, but we're not sure if anybody saw what happened so that's part of our investigation." ➤





- III Taking to heart lessons learned from the cost overruns on the \$9.7-billion first phase of its Horizon oil sands mine, Canadian Natural Resources Limited has overhauled its project execution strategy as it plans an expansion to 250,000 barrels per day of synthetic light crude. Debottlenecking and expansion will be combined, and the expansion from the current 110,000 barrels per day will be broken up into the five major components. These will be further divided into 46 individual projects that the company can start and stop at its discretion, says Canadian Natural president Steve Laut.
- IIII Grizzly Oil Sands ULC has announced results of a new bitumen resource assessment prepared by GLJ Petroleum Consultants Ltd. Properties that will be explored this winter were not included in the evaluation. Proved-plus-probable reserves for the Algar Lake project were estimated at 98 million barrels. The company expects that construction of the first phase of the Algar Lake steam assisted gravity drainage project will commence in the third quarter of 2011, and it plans to conduct an extensive exploration program in the first quarter.
- III SNC-Lavalin Group Inc. has announced that it has been awarded a contract to design, build, operate and maintain a workforce lodge for oil sands workers in Fort McMurray, Alta. This lodge will provide accommodation and recreational facilities for 2,500 workers during the construction phase of a major oil sands project. The contract also includes the turnkey provision of site preparation, pilings, water and waste water treatment facilities and backup power generation, as well as the provision of catering and support services at the lodge over the construction period. On-site construction is currently underway.
- III Southern Pacific Resource Corp. has announced a public offering, on a "bought deal" basis, of \$150-million principal amount of convertible unsecured subordinated debentures with an interest rate of six per cent per annum, payable semi-annually

- on the last day of June and December. Southern Pacific intends to use the proceeds of the offering to fund the development of its STP-McKay bitumen project. STP-McKay has design capacity of 12,000 barrels per day of bitumen treatment and 33,600 barrels per day of steam generation. The company expects, based on its own projections and third-party assessments, that STP-McKay will cost \$408 million or \$34,000 per barrel.
- Im Two oil sands mining projects proposed by Shell Canada Limited that will produce 300,000 barrels per day of bitumen will undergo environmental assessments by independent review panels, reports the Canadian Environmental Assessment Agency (CEAA). The federal government and the Energy Resources Conservation Board are discussing the possible establishment of joint review panels to assess these proposed projects. A draft version of the joint review panel agreements will be made available for public comment prior to being finalized. CEAA will make funding available to assist the public and Aboriginal groups to participate in the environmental reviews. An announcement on participant funding will be made at a later date.
- III Petrobank Energy and Resources Ltd. has announced the termination of licensing negotiations with a third-party international oil company (IOC). Petrobank says it has concluded that the ultimate execution of this agreement has been unreasonably protracted as the IOC has had a final version of the agreement, executed by Petrobank, since July 2010. No technical aspects of the toe to heel air injection (THAI) technology have been at issue. "We have, therefore, determined that it is in Petrobank's best interest to focus on our other licensing opportunities," the company says. "By terminating negotiations with this IOC, we are now able to initiate discussions with other parties operating in the same geographic region, who have also indicated strong interest in the THAI technology." ■

Project listings

Updated status of oil sands projects in Alberta As of March 4, 2011.

TECHNOLOGY LEGEND

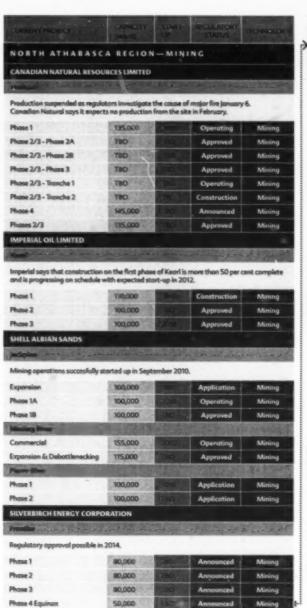
COCD Combustion overhead growty drainage

CSS Cyclic steam stimulat

ET-DSP Electro-thermal dynamic stripping proce

N-SOLV Heated solvent vapour entraction SACD Steem essisted grovity drainage

THAI Toe to heel air injection.



SUNCOR ENERGY INC.	A STATE OF THE STA		
Part Land		and the second second second	Carola.
Suncor says that higher bitum improved upgrader reliability, r of 2010.			
Millennium Debottlenecking	23,000	Operating	Mining
Alliensium Mine	294,000	Operating	Mining
North Steepbank Extension	180,000	Construction	Mining
Steepbank Debattleneck Phase 3	4,000	Operating *	Mining
		A NAME OF THE PARTY OF THE PART	and a su
Fort Hills in 2011, Debottleneck	25,000	Approved	Mining
Phase 1	165,000	Approved	Mining
Management & County of the Cou			
The first section of the section of	ACCOUNT DESCRIPTION		
YNCRUDE CANADA LTD.	120,000	Application	Mining
Phase 1 YNCRUDE CANADA LTD. Smodlen Oil Sends reports the se Syncrude project has a calcular realization or replacement of	a Tournille t 2010 production vehiclioned capital budget o	mes were the second high of \$2.4 billion for 2011, who	ich will inclu
YNCRUDE CANADA LTD. onadion Oil Sands reports the he Syncrude project has a calcie relocation or replacement of missions Reduction Project, to	t 2010 production vehicles to the control of the control of five mine the control of the control	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$1 d regular maintenance.	est on record ch will inclu
YNCRUDE CANADA LTD, anadian Oil Sands reports the ha Syncratie project has a calc ie relocation or replacement of missions Reduction Project, tol Aurora South Train 1	a Tourish t 2010 production volu ulated capital budget of flour out of five mine t	mes were the second high of \$2.4 billion for 2011, who prains, completion of the \$1	est on recor
YNCRUDE CANADA LTD, anadian Oil Sands reports the se Syncrade project has a calc the relocation or replacement of intuitions Reduction Project, tal harons South Train 1 Aurons South Train 2	t 2010 production vehicles to the control of the control of five mine the control of the control	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$1 d regular maintenance.	est on record ch will inclu
YNCRUDE CANADA LTD, anadian Oil Sands reports the he Syncrude project has a calce relocation or replacement of missions Reduction Project, tal Aurora South Train 1 Aurora South Train 2 loss Mine Stage 1 & 2	t 2010 production volu- ulated capital budget of four out of five mine t lings management on 106,000	mes were the second high f S2.4 billion for 2011, wh regins, correlation of the S1 d regular maintenance. Approved	est on record ch will inclu- menule
YNCRUDE CANADA LTD, anadian Oil Sands reports the re Syncrade project has a calc re relocation or replacement of missions Reduction Project, tal Aurora South Train 1 Aurora South Train 2 lose Mine Stage 1 & 2 Impansion	2010 production volu- dated copilol budget of four out of the mine to lings management on 100,000	mes were the succeed high of \$2.4 billion for 2011, who reins, completion of the \$1 d regular maintenance. Approved Approved	est on record ch will inclu- pactude Mining
YNCRUDE CANADA LTD, anadism Oil Sands reports the he Syncrude project has a call tenderation or replacement of relations Reduction Project, tal hurore South Train 2 harore South Train 2 lase Mine Stage 1 & 2 impension.	k 2010 production volu- ulated capital budget of four out of five minagement and 1001,000 1001,000	mes were the second high fS2.4 billion for 2011, where rains, completion of the St d regular maintenance. Approved Approved Operating	est on records will inclu packet Mining Mining
YNCRUDE CANADA LTD, anadism Oil Sands reports the he Syncrude project has a call tenderation or replacement of relations Reduction Project, tal hurore South Train 2 harore South Train 2 lase Mine Stage 1 & 2 impension.	2010 production volu- dated capitol budget of four out of the mine to lings management on 100,000 290,200	mes were the second high fS2.4 billion for 2011, where rains, completion of the St d regular maintenance. Approved Approved Operating	Mining Mining
YNCRUDE CANADA LTD, amedian Oil Sands reports the he Syncrate project has a calc relocation or replacement of missions Reduction Project, tol hurora South Train 1 hurora South Train 2 lapanation litege 3 Expansion OTAL ESP CANADA LTD.	t 2010 production volu- dicted capitol budget of four out of the mine t lings management on 100,000 290,700 T16,300 Z5	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$5 d regular maintenance. Approved Approved Operating Operating	est on records of well included Mining Mining Mining
YNCRUDE CANADA LTD, anadian Oil Sands reports the syncrate project has a calc te relocation or replacement of harora South Train 1 Aurora South Train 2 late Mine Stage 1 & 2 inpanaion itage 3 Expension OTAL ESP CANADA LTD.	t 2010 production volu- dicted capitol budget of four out of the mine t lings management on 100,000 290,700 T16,300 Z5	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$5 d regular maintenance. Approved Approved Operating Operating	est on records of well included Mining Mining Mining
YNCRUDE CANADA LTD, anadian Oil Sands reports the the Syncrate project has a calc the relocation or replacement of missions Reduction Project, tal harvers South Train 2 tage 1 de 2 impension tituge 3 Expension OTAL ESP CANADA LTD. diject to regulatory approval of the Joslyn, targeting a 2018 sta	2 2010 production valuated capital badget of four out of five relies tilings management on 106,000 290,700 116,300 200,700 and senction, Torril and rin-up.	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$5 d regular maintenance. Approved Approved Operating Operating	est on records of will include the monthly Mining M
YNCRUDE CANADA LTD. anadian Oil Sands reports the syncrate project has a calc relocation or replacement of missions Reduction Project, to humora South Train 1 humora South Train 2 base Mine Stage 1 & 2 Impansion itage 3 Expansion OTAL ESP CANADA LTD.	2 2010 production valuated capital badget of four out of five relies tilings management on 106,000 290,700 116,300 200,700 and senction, Torril and rin-up.	mes were the second high of \$2.4 billion for 2011, whi reins, completion of the \$5 d regular maintenance. Approved Approved Operating Operating	est on records of will include the monthly Mining M

	(666/d) UP	ANT REGULATORY STATUS	TECHNOLOGY	CURRENT PROJECT	(bbls/d)	START	STATUS.	TECHNOL
NORTH ATHABAS	SCA REGION-II	SITU		SOUTHERN PACIFIC RESOURCE	CE CORP.			
ATHABASCA OIL SANDS	ORP.			STP-McKey . The Control of the Control	- Maria Inches	and some	and of financial control	
Dever and and the first on		المعادي والمداعد والمعادين والمداري	"munder"	Southern Pacific has completed McKay thermal project. Constru			or full funding for Ph	ase 1 of the
AOSC filed its regulatory app	plication for a 250,000-ba	rrel-per-day project at Do	over in December	Phase 1	12,000		Construction	9 SAGD
2010. It has also received reg gravity drainage (TAGD), wi			nal assisted	Phase 2	12,000	A180	Announced	SAGD
Phase 1	50,000	Application	SAGD	SUNCOR ENERGY INC.	- Ministration	100	-	
Subsequent Phases	200,000	Application	SAGD					
Down West Clastics	- AND THE RESERVE OF THE	A Price and the second		Suncor says that higher bitumer	n supply from it	s in situ ovnie	cts and areater upon	roder reliabl
Phase 1	12,000	Announced	SAGD	led to record production rates in	the fourth quo	rter of 2010.	Firebag Phase 3 is es	spected to
Phase 2	25,000	Announced	SAGD	commence production in the ser	NAME OF TAXABLE PARTY.	nen constructi		Phase 4.
Phase 3	35,000	Announced	SAGD	Cogeneration and Expansion	25,000		Operating	SAGD
David West Labor College		ر عرب میشده و می رسید واقع	a the day through the	Phase 1	35,000	2004	Operating	SAGD
Subsequent phases will likely	be sized between 25,000	and 35,000 barrels per d	ау.	Phase 2	35,000	1006	Operating	SAGD
Phase 1 Demonstration	12,000	Announced	SAGD	Phase 3	68,000	on	Construction	SAGD
Mac any Rose		and a difference of the first of booking of	the freedom of the	Phase 4	68,000	7015	Construction.	SAGD
Commercial application on s	chedule for approval in late	e 2011 or early 2012.		Phase 5	68,000			
Phase 1	35,000	Application	SAGD		1004-7-40060		Approved	SAGD
Phose 2	40,000	Application	SAGD	Phase 6	68,000	- man	Approved	SAGD
Phase 3	40,000	Application	SAGD	U.S.				735
Phase 4	35,000	Application	SAGD	Phase 1	40,000	100	Application	SAGD
CANADIAN NATURAL RES	OURCES LIMITED			Phase 2	40,000	S DECK	Application	SAGD
Pirch Mountain	165024	1575 S. 1875 S. 1886	STATE OF A	March 1844				
Phase 1	60,000	Announced	TBA	Suncor says that higher bitumer reliability resulted in record prod				
Phase 2	60,000	Announced	TBA	confirmed that the MacKay Rive	er expansion is			
CENOVUS ENERGY INC.				\$70 million on the project in 201				-
Thinking Lake Bornells	A COURSE OF THE REAL PROPERTY.		A 100 1 10	Phase 1	33,000		Operating	SAGD
	La Tarthan State and the State							
Cenavus is awaiting regulato	ory approval and is working	with regulators to provin	de additional	Phase 2	40,000	E ZUIG	Announced	SAGD
				Phase 2 SUNSHINE OILSANDS LTD.	40,000	02010	Announced	SAGD
						e auto	Announced	SAGD
information. More information	on about the geology of th	e reservoir continues to b	e collected.	SUNSHINE OILSANDS LTD. Humper Sunshine Oilsands has closed a	\$210-million fin	ancing, It has	filling and partition of the commenced st	teaming at
	on about the geology of the	Application	se collected. SAGD	SUNSHINE OILSANDS LTD.	\$210-million fin	ancing, It has agressed the V	also commenced st West Ells project app	earning at a
information. More information Phase A Phase B	35,000 15,000 18	Application Application Announced	se collected. SAGD	SUNSHINE OILSANDS LTD. Harper Sunshine Oilsands has closed a ! Harper carbonate project, and re	\$210-million fin	ancing, It has agressed the V	also commenced st West Ells project app	teaming at t
Information. More information Phase A Phase B E-T ENERGY LTD. Popular Creak Small test angoing. Next stay	35,000 15,000 189	Application Announced Announced	SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation	\$210-million fin eports it has pro for application	ancing, It has agressed the V	also commenced st West Ells project app egend Lake and Thi	olication, an ickwood.
Information. More information Phase A Phase B E-T ENERGY LTD. Popular Creak Small test ongoing. Next stay anticipates regulatory appro-	on about the guckeyy of the 35,000 Ttu 15,000 Ttu 15,000 Ttu 15,000 Greating (100-200 bbls val for commercial project	Application Announced Announced	SAGD SAGD SAGD SAGD	SUNSHINE OILSANDS LTD. Hurper Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased	5210-million fin eports it has pro- for application 1,000	ancing, It has agressed the V s relating to L	also commenced st West Ells project app egend Lake and Thi Operating	earning at a slication, an ackwood.
Phase A Phase B STENERGY LTD. Popular Creak Small test ongoing. Next stay anticipates regulatory appro-	on about the guckeyy of the 35,000 Ttill 15,000 Ttill 15,	Application Announced Announced	SAGD SAGD SAGD SAGD M. E-T	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January	5210-million fin eports it has pro- for application 1,000	ancing, It has agressed the V s relating to L	also commenced st West Ells project app egend Lake and Thi Operating	earning at a slication, an ackwood.
Information. More information Phase A Phase B S-T ENERGY LTD. Popular Creak Small test angoing. Next stay anticipates regulatory approx Cammercial Pilot	on about the guckeyy of the 35,000 Ttu 15,000 Ttu 15,000 Ttu 15,000 Greating (100-200 bbls val for commercial project	Application Announced Announced Announced Announced Announced Announced Announced Announced Announced	SAGD SAGD SAGD SAGD	SUNSHINE OILSANDS LTD. Hurper Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased	5210-million fin eports it has pro- for application 1,000	ancing, It has agressed the V s relating to L	also commenced st West Ells project app egend Lake and Thi Operating	earning at a slication, an ackwood.
information. More information Phase A Phase B STENERGY LID. Popular Creak Small test angoing. Next star anticipates regulatory approx Commercial Pilot	on about the guckeyy of the 35,000 Ttill 15,000 Ttill 15,	Application Announced	SAGD SAGD SAGD SAGD M. E-T	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January	5210-million fin sports it has pro for application 1,000 d its oil sands ler 12 oil sands lar	ancing, It has agressed the V s relating to L	also commenced st West Ells project app egend Lake and Thi Operating	learning at blication, ar ckwood SAGD
Phase A Phase B STENERGY LTD. Popular Creak Small test ongoing. Next stay anticipates regulatory appro-	on about the guckeyy of the 35,000 Ttill 15,000 Ttill 15,	Application Announced	SAGD SAGD SAGD SAGD M. E-T	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January Phase 1	5210-million fin sports it has pre for application 1,000 it its oil sands ler 12 oil sands lar 10,000	ancing, it has ogressed the \ s relating to L ase holdings t ad sale.	adso commenced st West Ells project app egend Lake and Thi Operating to 1,086,393 acres— Announced	learning at blication, ar ckwood SAGD
information. More information. Phase A Phase B 2-T ENERGY LTD. Popular Creat Small test angoing. Next stanticipates regulatory approx Commercial Pilot HUSKY ENERGY ING. Severice Development drilling comme	on about the guology of the 35,000 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1780 1780 1780 1780 1780 1780 1780 1	Application Announced Announced Vd) expected in spring 20 in 2011. Application Operating	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3	5210-million fin eports it has pro for application 1,000 fits oil sands ler 12 oil sands lor 10,000	ancing. It has begressed the \ s relating to L asse holdings to a sole.	adso commenced st West Ells project app agend Lake and Thi Operating O1,086,393 acres— Announced Announced	earning at olication, arckwood. SAGD
Information. More information. More information. Phase A Phase B E-T ENERGY LTD. Popular Contact Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Section Development drilling comme development engineering for	an about the guology of the 35,000 15,000 178 178 178 178 178 178 178 178 178 178	Application Announced Announced Vd) expected in spring 20 in 2011. Application Operating	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion	5210-million fin eports it has profor applications 1,000 fits oil sands ler 12 oil sands lor 10,000 10,000	ancing, it has begressed the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to the Vas relating to the Vas relating	adso commenced st West Ells project app egend Lake and Thi Operating to 1,036,393 acres— Announced Announced Announced	earning at alication, or ckwood. SAGD It was the SAGD SAGD
Phase A Phase B E-T ENERGY LTD. Position Commercial Pilot HUSKY ENERGY INC. Section Commercial Pilot HUSKY ENERGY INC. Development drilling comme development engineering for to be in place by the end of 20	on about the guology of the 35,000 15,000 178 15,000 178 178 178 178 178 178 178 178 178 178	Application Announced Announced Va) expected in spring 20 in 2011. Application Operating 2011. Husky has initiated expecting a comprehensi	SAGD SAGD SAGD STAGD STAGD STAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD S	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Labo Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3	5210-million fin eports it has profor applications 1,000 fits oil sands ler 12 oil sands lar 10,000 10,000 20,000	ancing, it has begressed the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to the Vas relating to the Vas relating	adso commenced st West Ells project app egend Lake and Thi Operating to 1,036,393 acres— Announced Announced Announced	teaming at slication, or ckwood. SAGD -it was the SAGD SAGD SAGD
information. More information. Phase A Phase B E-T ENERGY LTD. Poplar Coult Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Secrice Development drilling comme fevelopment engineering for to be in place by the end of 20. Phase 1	on about the guology of the 35,000 15,000 178 178 178 178 178 178 178 178 178 178	Application Announced Announced Vd) expected in spring 20 in 2011. Application Operating 2011. Husky has initiated expecting a comprehensi	SAGD SAGD SAGD SAGD M. E-T ET-DSP ET-DSP conceptual ive full-field plan SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Phase 3 Expansion Thickness Phase 1	5210-million fin eports it has profor applications 1,000 fits oil sands ler 12 oil sands lar 10,000 10,000 20,000	ancing, it has begressed the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to Lase holdings to describe the Vas relating to the Vas relating to the Vas relating	adso commenced st West Ells project app egend Lake and Thi Operating to 1,036,393 acres— Announced Announced Announced	teaming at slication, or ckwood. SAGD -it was the SAGD SAGD SAGD
information. More information Phase A Phase B E-T ENERGY LTD. Projector Francis test ongoing. Next stay anticipates regulatory appro- Commercial Pilot HUSKY ENERGY INC. Search Development drilling comme development engineering for to be in place by the end of 2t Phase 1 Phase 2	on about the guology of the 35,000 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 178D 201	Application Announced Announced Announced Announced Announced Operating Construction Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Phase 3 Expansion	5210-million fin eports it has pro- for applications 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000	ancing. It has agreesed the to relating to L.	adso commenced st West Ells project app agend Lake and Thi Operating 10 1,036,393 acres— Announced Announced Announced Announced Announced Announced	learning at t olication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD
Phase A Phase B E-T ENERGY LTD. Point Creat Small test ongoing. Next stay anticipates regulatory appro Commercial Pilot HUSKY ENERGY INC. Searce Development drilling comme development engineering for to be in place by the end of 26 Phase 1 Phase 2 Phase 3	on about the guology of the 35,000 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1780 1780 1780 1780 1780 1780 1780 1	Application Announced Announced Announced Announced Announced Operating Construction Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Phase 3 Expansion Thickness Phase 1	5210-million fin eports it has profor applications 1,000 fits oil sands for 12 oil sands for 10,000 10,000 20,000 10,000	ancing. It has greated the target and the target and ta	also commenced st West Ells project app agend Lake and Thi Operating O1,036,393 acres— Announced Announced Announced Announced Announced Announced	learning at t blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD
Phase A Phase B Phase C Phase	ge of testing (100-200 bbls val for commercial project 10,000 TBD 200 mced in the first quarter of subsequent phases and is 011.	Application Announced Announced Announced Announced Announced Operating Construction Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Expansion Phase 3 Expansion Thickwood Phase 1 Phase 2 Fixed Phase 3 Expansion	5210-million fin eports it has pro- for applications 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000	ancing. It has greated the target and the target and ta	also commenced st West Ells project app agend Lake and Thi Operating O1,036,393 ocres— Announced Announced Announced Announced Announced Announced Announced Announced	learning at t blication, on ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
Phase A Phase B	on about the guology of the 35,000 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1780 1780 1780 1780 1780 1780 1780 1	Application Announced Announced Announced Announced Announced Operating Construction Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Expansion Phase 3 Expansion Thickness 1 Phase 1 Phase 2 Expansion	5210-million fin eports it has pro for application 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000 20,000 20,000 20,000	ancing. It has greated the target asset holdings to Land asset holdings to Land asset holdings to Land asset holdings to Land asset holdings to discharge the Land asset holdings the Land asset holdings the Land asset holdings the Land asset holdings to discharge the Land asset holdings the Land asset hold	also commenced st West Ells project app agend Lake and Thi Operating O1,036,393 ocres— Announced Announced Announced Announced Announced Announced Announced Announced	learning at t blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
nformation. More information phase A Phase B -T ENERGY LTD. Physic Could be a second physical	on about the guology of the 35,000 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1781 15,000 1780 1780 1780 1780 1780 1780 1780 1	Application Announced Announced Announced Announced Announced Operating Construction Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	SUNSHINE OILSANDS LTD. Hurper Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Expansion Thickwood Phase 1 Phase 2 Phase 3 Phase 3 Phase 3 Phase 3 Phase 3 Phase 4 Phase 5 Phase 5 Phase 6 Phase 6 Phase 6 Phase 7 Phase 7 Phase 7 Phase 8 Phase 9 Phase	5210-million fin eports it has pro for application 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000 20,000 20,000 20,000	ancing. It has greated the target asset holdings to Land asset holdings to Land asset holdings to Land asset holdings to Land asset holdings to discharge the Land asset holdings the Land asset holdings the Land asset holdings the Land asset holdings to discharge the Land asset holdings the Land asset hold	also commenced st West Ells project app agend Lake and Thi Operating O1,036,393 ocres— Announced Announced Announced Announced Announced Announced Announced Announced	learning at t blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
information. More information Phase A Phase B ST ENERGY LTD. Popular Creats Small test angoing. Next stagniticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Securice. Development drilling comme levelopment engineering for a be in place by the end of 20 Phase 1 Phase 3 Phase 4 VANHOE ENERGY INC. Taxanack Application filed November 2	on about the guology of the 35,000 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 120 150	Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	SUNSHINE OILSANDS LTD. Hurper Sunshine Oilsands has closed a Harper carbonate project, and re commenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Expansion Thickeased Phase 2 Phase 2 Phase 2 Phase 1 Phase 2 Phase 2 Phase 2 Phase 1 Phase 1 Construction on Phase 1 is expect	5210-million fin eports it has pro- for application 1,000 18 soil sands for 12 oil sands for 10,000 10,000 20,000 10,000 20,000 20,000 20,000	ancing. It has greated the target sale to the target sale holdings to the target sale. July 180 180 180 180 180 180 180 180 180 180	diso commenced st West Ells project app agend Lake and Thi Operating O1,036,393 ocres— Announced Announced Announced Announced Announced Announced Announced Announced	eaming at blication, or ckwood. SAGD
information. More information Phase A Phase B ST ENERGY LTD. Popular Creats Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Securice. Development drilling comme levelopment engineering for one in place by the end of 20 Phase 1 Phase 3 Phase 4 VANHOE ENERGY INC. Temporals Application filed November 2 Phase 1	on about the guology of the 35,000 15,000 118 ge of testing (100-200 bbls val for commercial project 10,000 TBD 200 118 Go,000 201 50,000 201 5	Application Announced Application Announced Announced Announced Announced Announced Announced Application Operating 2011. Husky has initiated expecting a comprehensi Construction Approved Approved Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Expansion Phase 3 Expansion Thickwood Phase 1 Phase 2 Expansion Thickwood Phase 1 Phase 1 Phase 2 Expansion	5210-million fin eports it has pro- for application 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000 20,000 20,000 20,000 20,000	ancing. It has greated the target sale to the target sale to the target sale to the target sale to the target sale	diso commenced st West Ells project app egend Lake and Thi Operating O1,036,393 ocres— Announced	eaming at blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
information. More information Phase A Phase B STENERGY LTD. Popular Creak Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Securice Development drilling comme levelopment engineering for to be in place by the end of 20 Phase 1 Phase 3 Phase 4 VANHOE ENERGY INC. Temporal Light State of the levelopment engineering for the phase 4 VANHOE ENERGY INC. Temporal Light State of the levelopment engineering for the phase 3 Phase 3 Phase 4 VANHOE ENERGY INC. Temporal	on about the guology of the 35,000 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 120 150	Application Announced Announced Announced Announced Announced Announced Announced Announced Application Operating 2011. Application Approved Approved Approved Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Expansion Thickseed Phase 1 Phase 2 Phase 2 Expansion Thickseed Phase 1 Phase 2 Phase 2 Phase 1 Phase 2 Phase 2 Expansion	5210-million fin eports it has pro- for application 1,000 1 its oil sands for 12 oil sands for 10,000 10,000 20,000 10,000 20,000 20,000 20,000 20,000 20,000 5,000	ancing. It has agreesed the target sale and the target sale and target sale an	diso commenced st West Ells project app egend Lake and Thi Operating O1,036,393 ocres— Announced	eaming at blication, or ckwood. SAGD SAGD
information. More information Phase A Phase B STENERGY LTD. Popular Creak Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Securice Development drilling comme levelopment engineering for to be in place by the end of 20 Phase 1 Phase 3 Phase 4 VANHOE ENERGY INC. Temporal Light State of the levelopment engineering for the phase 4 VANHOE ENERGY INC. Temporal Light State of the levelopment engineering for the phase 3 Phase 3 Phase 4 VANHOE ENERGY INC. Temporal	on about the guology of the 35,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 20	Application Announced Application Announced Announced Announced Announced Announced Announced Application Operating 2011. Husky has initiated expecting a comprehensi Construction Approved Approved Approved Approved Approved	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Expansion Thickseed Phase 1 Phase 2 Phase 2 Expansion West Ells Construction on Phase 1 is expect Phase 1 Phase 2 Phase 3	5210-million fin eports it has profor application 1,000 fits oil sands for 12 oil sands for 10,000 fin,000 fin	ancing. It has agreesed the target sale and the target sale and target sale an	diso commenced st West Ells project app egend Lake and Thi Operating O1,036,393 ocres— Announced	eaming at blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
information. More information information. More information. Phase A Phase B B T ENERGY LTD. Popular Creak Small test angoing. Next stay anticipates regulatory approximately approxima	on about the guology of the 35,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 20	Application Announced Announced Announced Announced Announced Announced Announced Application Application Approved Approved Approved Approved Approved Approved Application Application Application	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lake Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Expansion Phase 3 Expansion Thickseast Phase 2 Expansion West Ets Construction on Phase 1 is expected the phase 2 Phase 2 Phase 3 Expansion	5210-million fin eports it has profor application 1,000 fits oil sands for 12 oil sands for 10,000 fin,000 fin	ancing. It has agreesed the target sale and the target sale and target sale an	diso commenced st West Ells project app egend Lake and Thi Operating O1,036,393 ocres— Announced	eaming at t blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD
information. More information Phase A Phase B E-T ENERGY LTD. Popular Creat Small test angoing. Next stay anticipates regulatory approx Commercial Pilot HUSKY ENERGY INC. Secreta Development drilling comme development engineering for to be in place by the end of 20 Phase 1 Phase 2 Phase 3 Phase 4 VANHOE ENERGY INC.	on about the guology of the 35,000 15,000 118 15,000 118 15,000 118 15,000 118 15,000 118 15,000 15,000 150,000 20,000	Application Announced Application Announced Announced Announced Announced Announced Application Application Construction Approved Approved Approved Approved Approved Approved Approved Application Application Application	SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD	SUNSHINE OILSANDS LTD. Hurper Sunshine Oilsands has closed a Harper carbonate project, and recommenced formal preparation Carbonate Pilot Legand Lilian Sunshine Oilsands has increased purchaser of land at the January Phase 1 Phase 2 Phase 2 Expansion Phase 3 Phase 3 Expansion Thicknessed Phase 1 Phase 2 Phase 2 Expansion West Etha Construction on Phase 1 is expected the phase 1 Phase 2 Phase 3 Phase 4 TOTAL ENP CANADA LTD.	5210-million fin eports it has profor application 1,000 fits oil sands for 12 oil sands for 10,000 fin,000 fin	ancing. It has agreesed the target sale and the target sale and target sale an	diso commenced st West Ells project app egend Lake and Thi Operating O1,036,393 ocres— Announced	eaming at t blication, or ckwood. SAGD SAGD SAGD SAGD SAGD SAGD SAGD SAGD

SOUTH ATHABASCA REGION-IN SITU

ALBERTA OIL SANDS INC

Alberta Oilsands submitted a substantive project update to the ERCB and Alberta Environment in late Decimber 2010, also providing responses to supplemental information requests. The update includes details on stokeholder consultation and technical work on reservoir and caprock characteristics that have been completed since regulatory filing. The company expects to receive regulatory approval in 2011.

2	10,000	and a section	Announced	SAGD
	4,500	2012	Application	SAGD
ASCA OIL SAND	4,500 SCORP	2012	Application	•

Regulatory application to be submitted second half of 2011

Phase 1	12,000		Announced	SAGD
Phase 2	25,000	016	Announced	SAGD
Phase 3	25,000	018	Announced	SAGD

Excelsior Energy was acquired by Athabasca Oil Sands Corp. in November 2010.

	Experimental Combustion Pilot	1,000	أرق والمكرين	Application	COGD
#LACKPEARL RESOURCES INC.	ACKPEARL RESOURCES INC.	April 1			

BlackPearl is preparing a regulatory application for a commercial 40,000-barrel-per-day project, to be developed in phases. Target filing is in the first quarter of 2012. Facility construction on first phase expected to be complete in April 2011, with first steam injection targeted for the second quarter.

40,000	بتعاملين ا	Announced	SAGD
500	2011	Construction	SAGD
SOURCES LIMITED			
ASSES WAS	A STATE OF THE PARTY OF THE PAR		
60,000	V 175	Announced	. TBA
	9,38	45 BUSINE	MAN THE
60,000	Total I	Announced	SAGD
	intel of		
	500 SOURCES LIMITED	SOURCES LIMITED	SOURCES LIMITED 60,000 Announced

Initial field development includes 47 SAGD horizontal well pairs with 16 of them to be drilled in 2011. Project may include a Phase 2 Debattleneck in 2024.

Phase 1	40,000	31	Construction	SAGD .
Phase 2	TBD	2000	Announced	SACD -
The Asia Property and the Section 1		THE RESERVE TO SERVE	CONTRACTOR DESCRIPTION	TO SHARE SHEET AND

Canadian Natural Resources purchased Enerplus' Kirby assets for \$405 million in October 2019.

Phase 1	10,000		Application	SACD
Phose 2	25,000	2017	Announced	SAGD
Letomor				
Commercial	30,000	2020	Announced	SAGD
		The state of the s		

Cenavus reports that net production at Christina Lake and Foster Creek increased by 33 per cent in the fourth quarter 2010 versus the fourth quarter of 2009. Construction on Phase C is nearing completion, and construction on Phase D is well underway. Engineering for Phase E and preliminary site clearing for Phase F is expected to start in 2011. Cenovus will spend up to \$400 million at Christina Lake in 2011.

	Territories representation			
Phase 1A	10,000	ALC: MAG	Operating	SAGD
Phase 1B	8,800	2000	Operating	SAGD

10 10	2013	Construction Construction	SAGD SAGD
0.0000000	.2013 ;	Construction	SAGD
(Nadominos)			
0	2014	Application	SAGD
0	2016.	Application	SAGD
0	2017.	Application	SAGD
0	2017	Application	SAGD
	00	00 -2017	Application Application Application

Interim funding for Phase F has been approved by Cenovus and ConocoPhillips, with final approval for Phases F-H expected this year. Engineering, procurement and site preparation are continuing. Preliminary plant construction is expected in 2011. Cenovus will spend up to \$400 million at Foster Creek in 2011.

Phase A	24,000	and the state of	Operating /	SAGD
Phase B Debottleneck	6,000	2003	Operating	SAGD
Phase C Stage 1	10,000	2006	Operating	ŚAGD
Phase C Stage 2	20,000	2007	Operating	SAGD
Phase D	30,000	/ ADDR:	Operating	SACD
Phase E	30,000	1000	Operating	SACD
Phase F	30,000	2014	Approved	SACD
Phase G	30,000	2016	Approved	SAGD
Phase H	30,000	-017	Approved ,	SAGD
Phase I	25,000	abre still	Announced	SAGD

Single well pair SAGD pilot underway. Steaming started in December and early results are expected in the first half of 2011. If successful, Cenovus will file a commercial application in 2011.

Phase A	60,000	100	Announced	SAGD
Phase B To The Property of the	60,000	(BE)	Announced	SAGD
Phase C	60,000	TEO	Announced	SAGD
Pilot	600	Total .	Operating	SAGD

Narrows Lake is now jointly owned with ConocoPhillips. Cenovus will spend up to \$200 million on emerging projects in 2011 including Norr

Phase 1	43,333	-	Application	SAGD
Phase 2	43,333	180	Announced	SAGD
Phase 3	43,334	180	Announced	SAGD

CONNACHER OIL AND GAS LIMITED

Great Di

6.

Connacher reports that during the month of January 2011 it restricted its bitumen production at Great Divide by about 15 per cent of December levels due to limited access to storage facilities, soles terminals, crude oil delivery trucks and sales pipelines. It also temporarily scaled back production at Algar to facilitate the planned installation of downhole pumps in there wells.

Algar Pod 2	10,000	(1) (1) (1) (1)	Operating	SAGD
Expansion	24,000	Setz	Application	SAGD
Pod 1	10,000	2007	Operating	SAGD

Earthworks ongoing for Phase 2. ConocoPhillips says that during the fourth quarter of 2010, the sale of certain non-strategic assets allowed it to reallocate capital to higher margin projects such as Canadian oil sands.

Phase 1	27,000	في وأقلل	Operating	SAGD
Phase 2	83,000	2015	Construction	SAGD
Pilot	1,200	997	Operating	SAGD

Jackfish 2 construction is now complete. Steam injection to begin in the second quarter with first oil expected by the end of 2011. Corporate sanction already in hand for Jackfish 3, for which an application was filed during the fourth quarter of 2010.

Commercial	TBO	300	Announced	SACD
Kirby-Pike			() () () () ()	
Jackfish 3	35,000	1015	Application	SAGD
Jackfish 2	35,000	2011	Operating	SAGD
Jackfish 1	35,000	_\$.00 co	Operating	SAGD

CURRENT PROJECT	CAPACITY.	START- UP	STATUS	TECHNOLOG	CURRENT PROJECT	CAPACITY 5TZ (bbls/H) UP	ART REGULATORY STATUS	TECHNOL
GRIZZLY OIL SANDS LILC					NEXEN INC.			
Alger Lohn	in a procession	e activation	in which the state of the said	more and a	Long Lake Advantage 1999	lister wife of the comments	and a language payment	
Grizzly plans lump-sum bidding	of module fabric	otion in 201	11.		Although the bitumen product	tion side of the Long Lake	project continues to exp	erience
Phose 1	5,000	2013	Application	SAGD	operational difficulties, partne consistently. Despite a brief in	r OPTI Canada is reporti	ng that upgrader units an	e performir
Phase 2	5,000	2014	Application	SAGD	averaged 90 per cent for the fo			Jecum Cimie
HARVEST OPERATIONS CORE	ROSE PRODUCTION				Long Lake South Phase 1	40,000	Approved	SAGE
physical accurations con	r renditivity				Long Lake South Phase 2	40,000	Approved	SACE
		men to have			Phase 1	72,000	Operating	SAGE
Harvest plans to spend \$240 mill construction of the plant, and \$1					Phase 2	72,000	Approved	SACE
Phase 1	10,000	To a second	Construction	SAGD	Phase 3	72,000	Announced	SAGE
Phase 2	20,000	2015	Application.	SAGD	Phase 4	72,000	Announced	SAGE
HUSKY ENERGY INC.	20,000	2015	Application	SAGO	PARAMOUNT RESOURCES L	TD.		
IUSKT ENERGT INC.					The second of th	the state of the s	atterior commence of the contract of the contr	. الدرية الله
					Application to be filed in 2011.	7.		
Construction will be proceeding econd quarter. Husky intends to					Commercial	TBD	Announced	SAGD
njection well to facilitate hitum		neroted Iron	TO SE COMPUSCION II	ont from an ar	PETROBANK ENERGY AND E	RESOURCES LTD.		
Thermal Conduction Pilot	755	Mark con	Approved	SAGD	May Bloom and the series had an	ما والمارية المستبدين من من	فالمراوعين والمبيدا فالعدريهم	at the same of
APAN CANADA OIL SANDS L	IMITED				May River is in final detailed er equipment.	ngineering, and orders ha	ve been placed for some	ong-lead
	70.70.70		and the state of	arrivation, and	Phase 1	10,000	Application	THAI
ACOS anticipates mandatas a	manual for the san	1		-60000	Subsequent Phases	90,000	Disclosed	THAI
ACOS anticipates regulatory ap	NAME OF TAXABLE PARTY.	I exponsion					A vitamentia manifest process	THAI
Expansion	35,000	Cita :	Application	SAGD	Petrobank says it is planning to	test grogen enrichment	and CO. m-injection in 2	011
					Expansion	1,900	Approved	THAI
Pilot	11,000	1999	Operating	5AGD	Pilot	1,900	Operating	THAI
ARICINA ENERGY LTD.	A Made to the				STATOIL			.,,,,,
Carried State of the Lore	Section of the second	30/59			Control of the second of the second			or critic
Commercial Demonstration Phase 1	5,000	2012	Construction	SAGD	Commercial	40,000	Application	SAGD
Phase 2	30,000	2014	Announced	SAGD	Expansion	40,000	Application	SAGD
ye uA	The state of the			in Leading 11,000	and the same			
aricina commenced steam injec	tion at Calculiin	December	2010 71		Commercial	20,000	Application	SAGD
elp confirm the Grosmont carbo	mates as an ecor	tomic foun	ation for SAGD.	designed to	William bearing			A. S. S. S.
Phase 1	10,700	v.063	Announced	SAGD	First production achieved. Acco	ording to the ERCB, produ	iction averaged about 87	O barrels p
Pilot	1,800	2011	Operating	SAGD	day in November 2010.			
MEG ENERGY CORPORATION					Leismer Demonstration	10,000	Operating	SAGD
		aseros		BIT STATE OF THE S	Real Property			SOF
					Commercial	20,000	Application	SAGD
AEG is reporting bitumen produ f 2010, with a steam to oil rati	ection in excess o o lower than des	of plant cap sian. The ca	pacity during the formous has comme	urth quarter nced drilling	Expansion	20,000	Application	SAGD
t Phase 2B and will commence					Partiment Laboratory			
ost \$1.4 billion.	Charles and the same of			9 0 0	Commercial	20,000	Application	SACD
Phase 1 Pliot	3,000	2.1.1	Operating	SAGD	Santh) Linear			
Phose 2	22,000	2009	Operating	SAGD	Commercial	20,000	Application	SAGD
Phase 2B	35,000	2013	Construction	SAGD	The state of the s		SECTION AND ASSESSED.	
	50,000	2016	Application	SAGD	Commercial	40,000	Application	SAGD
hase 3A	50,000	2018	Application	SACD.	Exponsion	20,000	Application	SAGD
	Name and Address of the Owner,	2020	Application	SAGD	SUNCOR ENERGY INC.		HZ TOTAL	
Phase 38	50,000		STATE OF THE LOCAL	A SALVAGOS	Charge	40,000	DESTRUCTION OF THE PERSON OF T	
thase 36 those 3C	50,000					40,000		
Phase 3B Phase 3C		arrel-per-d-	y project in the seco	nd	Phase 1		Announced	SAGD
hase 36 hase 3C equiatory application to be filed		orrel-per-da	y project in the seco	nd	Marchael Cont.			
Phase 38 Phase 3C Service agulatory application to be filed uorter 2011.		orrel-per-do	y project in the seco	nd SAGD	Phase 1	40,000	• Approved	SAGD
Phase 3A Phase 3C Served egulatory application to be filed worter 2011. Phase 1 Phase 2	for a 100,000-ba				Phase 2			
Phase 3B Phase 3C Service Segulatory application to be filed worter 2011. Phase 1	for a 100,000-ba	-2003	Announced	SAGD	Phase 2 VALUE CREATION INC.	40,000 FEE	• Approved	SAGD
hase 3B thase 3C series gulatory application to be filed orter 2011. thase 1 thase 2	for a 100,000-ba	-2003	Announced	SAGD	Phase 2 VALUE CREATION INC.	40,000 FED	Approved Approved	SAGD SAGD

January Destroyality wall to find the reality	and the later	· Inc. Later de	Contract Contract	166 - 2 6 Nov. 18 Miles
CURRENT PROJECT	CAPACITY (bbis/d)	START- UP	REGULATORY STATUS	TECHNOLOG
The Control of the Co	and the state of the state of		ALL TO PRODUCE	10.00

COLD LAKE REGION-IN SITU

CANADIAN NATURAL RESOURCES LIMITED

Primrose/Wolf Loke

Canadian Natural will spend \$830 million at Primrose and on future thermal projects (excluding Kirby) in 2011. The company is targeting a 12 per cent production increase at Primrose in 2011 versus 2010.

Demonstration	10,000	5000	Approved	SAGD
Corthag	Sand Jan Jan Jan			
HUSKY ENERGY INC.		-100		
Wolf Lake	13,000	985	Operating	CSS
Primrose South	45,000	935	Operating	CSS
Primrose North	30,000	2006	Operating	CSS
Primrose East	32,000	general contraction of	Operating	CSS

Husky is addressing production challenges by remediating older wells with new stimulation techniques, drilling new wells and initiating new start-up procedures.

Phase 1	30,000	S. Balancia	Operating	SAGD
IMPERIAL OIL LIMITED	e terret to the total and the total			
Cold Laboratoria	Contracted by 19,000 march and 190	Santa Secreta		10 10 2 5

Imperial Oil is reporting higher bitumen production levels in the fourth quarter of 2010 vers the same period of 2009, in part due to higher reliability. The company says that the regulatory approval process for Nabiye advanced with ERCB scheme amendment and Alberta Utilities Commission approvals. Site clearing and road construction underway.

LASER CSS Follow-up Process	TBD	2.27.77%	Operating	CSS
Phase 1-10	110,000	985	Operating	css
Phase 11-13	30,000	4002	Operating	CSS
Phase 14-16	30,000	2015	Approved	css

KOCH EXPLORATION CANADA CORPORATION

According to the Cold Lake Sun, the project is nearing the end of the regulatory process and is planning a first phase single well pair SAGD test.

Commercial	10,000	in the state of the	Application	SAGD
Pilot	1,200	130	Application	SAGD
OSUM OIL SANDS CORP.	· Land John Strike			B 1

Regulatory approval expected to be received mid-2011. OSUM has appointed Victor Roskey as chief financial officer. Roskey previously held senior monagement positions at EdgeStone Capital Partners, Enterra Energy Trust, Scotia Waterous and Citibank Canada.

Phase 2	17,500	2016	Application	SAGD
PENGROWTH CORPORATION	A Shi wage			

Pengrowth says that Lindbergh is one of four major operated growth areas that will enjoy parts of its \$400-million 2011 capital program.

Pilot	2,500	21.50 - 3	Application	SAGD
ROYAL DUTCH SHEL	LPIC			
Orien	ALL SECTION	No.		
Phase 1	10,000	2008	Operating	SAGD
Phase 2	10,000	B.C.	Approved	SAGD

CURRENT PROJECT	CAPACITY (bbls/d)	START- UP	REGULATORY STATUS	TECHNOLOGY
PEACE RIVER RE	GION—IN SI	TU		
ANDORA ENERGY CORPO	RATION			
Countain	SERVICE OF STREET	SEE MARK	MERVIND NAVEL	OF EASTERNANCE IN

Andora Energy owner PanOrient Energy Corp. says Andora will be conducting a strategic review process to enhance shareholder value that could result in a sale or merger.

SAGD Demonstration	1,400	Approved	SAGD
NORTHERN ALBERTA OIL C	TD.	S. S. S.	
Sorm Lake			
CSS Pilot	TBD DED	Approved	CSS
PETROBANK ENERGY AND	RESOURCES LTD.		
Demon	CELLIFIED ENDERED	The String with more great	man halo hair

Initial two-well development to begin in the second quarter, with heating cycle expected to begin in the third quarter.

THAI Demonstration	TBD	3	Approved	THAI
ROYAL DUTCH SHELL PLC				
People River of a contract of	**************************************		RIVER SHEET	
Codotte Lake	12,501	986	Operating	CSS
Carmon Creek - Phase 1	40,000	2014	Announced	CSS
Carmon Creek - Phase 2	40,000	(10E)	Announced	CSS
SOUTHERN PACIFIC RESOU	RCE CORP.			
Red Earth Assessment	- A. J. W A.	10 10 10 10 10 10 10 10 10 10 10 10 10 1	العامرين إيا	Matter was I

Southern Pacific and North Peace Energy have completed the plan of arrangement by which Southern Pacific acquires North Peace and all its assets, including Red Earth.

Commercial	10,000		Announced	CSS
Pilot	1,000	2003	Operating .	CSS
Pilot Expansion	3,000		Announced	CSS

SASKATCHEWAN REGION—IN SITU OILSANDS QUEST INC.

A class action lawsuit has been launched against Oilsands Quest, alleging the company overstated the value of its assets between 2006 and 2009, resulting in artificial inflation of its trading price. The company says the claim is without merit. Oilsands Quest has established an "at the market" equity financing program. Funds raised will be used to finance re-abandonment of core holes and general corporate purposes. Near-term priority for Oilsands Quest is to convert its oil sands permits to a long-term lease and complete the re-abandonment program.

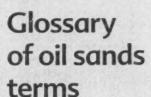
Commercial	30,000	استعقشن	On Hold	SAGD
Reservoir Test	600	3008	On Hold	Test
SAGD Plot	TBD	The Date of the last	On Hold	SAGD

NORTH ATHABASCA REGION-UPCRADER CANADIAN NATURAL RESOURCES LIMITED

Production suspended as regulators investigate the cause of major fire January 6. Canadian Natural says it expects no production from the site in February.

Phase 1	114,000	Jane Bridge	Operating	Upgrader
Phase 2/3 - Phase 2A	5,000	2014	Approved	Upgrader
Phase 2/3 - Phase 2B	35,000	180	Approved	Upgrader
Phase 2/3 - Phase 3	45,000	BD	Application	Upgrader
Phase 2/3 - Tranche 1	TRO	180	Operating	Upgruder
Phase 2/3 - Tranche 2	5,000	TED	Construction	Upgrader
Phase 4	125,000	OBI	Announced	Upgrader
Phoses 2/3	28,000	1	Approved	Unaradie

CURRENT PROJECT	CAPACITY (bbls/d)	START- UP	REGULATORY STATUS	TECHNOLOGY	CURRENT PROJECT	CAPACITY (bols/d)	START: R	STATUS	TECHNOLOG
SUNCOR ENERGY INC.					INDUSTRIAL HI	EARTLAND RE	G 10 N — U 1	PGRADEF	1
Base Operations Advantage	or and district	in the state of	Am again hash	Constitution of the	NORTH WEST UPGRAD	ING INC.			alle deposited
Suncor says that higher biturne improved upgrader reliability, re of 2010.	n rates from its m esulted in record o	ining and in sil il sands produ	tu operations, co ction rates in the	mbined with fourth quarter	Upgrader The Alberta government	are coaled the deal with	North West Ur	anding and p	ortner Canadiar
Millennium Coker Unit	97,000	Latin W	Operating	Upgrader	Natural Resources to supp				
Millennium Vacuum Unit	35,000	22005	Operating	Upgrader	Phase 1	77,000	patient.	Approved	Upgrader
U1 and U2	225,000	567	Operating	Upgrader	Phase 2	77,000	180	Approved	Upgrader
territin	1 (4) 22 22 100	e e de la composition della co	Vicinitian R. S.	Proceedings Comment	Phase 3	77,000	2016	Approved	Upgrader
Subject to sanction, Suncor and of the Fort Hills project, targetin 2011.					SHELL ALBIAN SANDS				
Phose 1	145,000	Marriagen	Approved	Upgrader	Mining feed for upgrader	ermansion has beaun a	nerations. Proje	ct partner Mar	rathon Oil repor
Phase 2 & 3	145,000	2015	Approved	Upgrader	that expanded upgrader of	perations began the co	mmissioning or		
Voyager Upprodice				STAN STAN	quarter, and will continue	through the first quarte	er of 2011.		ELLIV
Suncor will spend \$260 million					Commercial	158,000	Agricultury .	Operating	Upgrader
Suncor and new partner Total E start-up in 2016.	εδιΡ Canada will re	estart constru	ction of Voyageu	r, targeting	Expansion	91,000	- 2000	Construction	Upgrader
Phase 1	127,000	Towns I	Approved	Upgrader	Scotland Upgradur 2		A		Vince and or
Phase 2	63,000	5180	Approved	Upgrader	Shell withdrew its applica	tion for all phases of Sc	otford Upgrade	r 2 in fall 2010.	
SYNCRUDE CANADA LTD.		1			Phase 1	97,750	Tikkenia.	Concelled	Upgrader
Affidied Lobe/Aurers North	6 South	to the contract of the	and the same	Company of the second	Phase 2	97,750	BD	Cancelled	Upgrader
Canadian Oil Sands reports tha	at 2010 production	n volumes wer	e the second high	nest on record.	Phase 3	97,750	700	Cancelled	Upgrader
						For Tank and State	Contractor of		Particular Control
The Syncrude project has a calc					Phose A	97.750	Selbia	Cancelled	Ungrader
The Syncrude project has a calc the relocation or replacement of Emissions Reduction Project, ta	of four out of five n	mine trains, co	mpletion of the S		Phase 4	97,750	IBL	Cancelled	Upgrader
the relocation or replacement of	of four out of five n	mine trains, co	mpletion of the S		Phase 4 STATOIL	de la la la descripción de la composición dela composición de la composición de la composición dela composición dela composición dela composición de la composición de la composición de la composición dela composición de la composición de la composición dela composición d	Paga and a	Cancelled	Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2	of four out of five r nilings managemen	mine trains, co	mpletion of the S maintenance.	yncrude			() the same was	Cancelled	Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking	of four out of five railings management	mine trains, co	mpletion of the S maintenance. Operating	yncrude Upgrader	STATOIL		1BD	Cancelled	Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlecking	of four out of five natings management 250,000	mine trains, co	mpletion of the S maintenance. Operating Announced	Upgrader Upgrader	STATOIL Application withdrawn in	December 2008.	(BD)	, Q ,,	
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Expansion (UE-1)	250,000 75,000	mine trains, co	mpletion of the S maintenance. Operating Announced	Upgrader Upgrader Upgrader Upgrader	STATOIL Application withdrawn in Phase 1	December 2008. 65,000	7 EU	Cancelled	Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Turns de Grace Phose 1	250,000 75,000 100,000	mine trains, co	mpletion of the S maintenance. Operating Announced Operating Announced	Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LE	December 2008. 65,000	180 30 30 50 80	Cancelled	Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlenecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Turns de Gruce. Phose 1 Phose 2	75,000 100,000 33,600 33,600	mine trains, co	operating Announced Operating Announced Announced Announced Announced	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EMP CANADA IT	December 2008. 65,000 152,000	mo	Cancelled Cancelled	Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Remarks Grace Phase 1	250,000 75,000 100,000	mine trains, co	mpletion of the S maintenance. Operating Announced Operating Announced	Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LE	December 2008. 65,000 152,000 10.	v the Northern L	Cancelled Cancelled	Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Turns de Gruce Phose 1 Phose 2	75,000 75,000 75,000 100,000 33,600 8,400	mine trains, co nt and regular	Announced Announced Announced Announced Announced Announced Announced Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EMP CANADA IT in the provious project owner Sy	December 2008. 65,000 152,000 10.	v the Northern L	Cancelled Cancelled	Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Turns the Create Phase 1 Phase 2 Pilot	75,000 75,000 75,000 100,000 33,600 8,400	mine trains, co nt and regular	Announced Announced Announced Announced Announced Announced Announced Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LI	December 2008. 65,000 152,000 TD. menco Energy withdrey ad Synenco in August 20	v the Northern L	Cancelled Cancelled	Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Terra de Grace Phase 1 Phase 2 Pilot SOUTH ATHABASC NEXENING.	75,000 75,000 75,000 100,000 33,600 8,400	mine trains, contains, con	Announced Announced Approved Approved A D E R	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LIMENT STATES TO June 2008. Total purchase 1 Phase 1	December 2008. 65,000 152,000 170, TD, TD, TD, TD, TD, TD, TD, TD, TD, TD	v the Northern L	Cancelled Cancelled Lights upgrade Cancelled	Upgrader Upgrader er application in
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Remarkle Gruce Phase 1 Phase 2 Pilot SOUTH ATHAEASC NEXENING. Long Laine	75,000 75,000 75,000 100,000 33,600 33,600 8,400	inine trains, contain trains	mpletion of the S maintenance. Operating Announced Operating Announced Announced Announced Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LI Interheum Library Previous project owner Sy June 2008. Total purchase Phase 1 Phase 2	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600	v the Northern L	Cancelled Cancelled Lights upgrade Cancelled	Upgrader Upgrader er application in
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlenecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Lime & Grace Phase 1 Phase 2 Pilot SOUTH ATHABASC NEXENING. Lime Lime Although the bitumen product operational difficulties, partner	250,000 75,000 100,000 33,600 33,600 8,400 A REGION	mine trains, contains, con	mpletion of the S maintenance. Operating Announced Operating Announced Announced Approved A D E R	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA IT Interests Inter	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600	v the Northern L	Cancelled Cancelled Lights upgrade Cancelled	Upgrader Upgrader er application in
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlecking Stage 3 Debottlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Form the Groce Phase 1 Phase 2 Pilot SOUTH ATHABASC NEXEN INC. Long Lalian Although the bitumen producti	75,000 75,000 100,000 33,600 3,600 8,400 A REGION	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	mpletion of the S maintenance. Operating Announced Operating Announced Announced Announced Approved A D £ R	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA L. Intributed 1.1 Phase 2 Previous project owner Sy June 2008. Total purchase 1 Phase 1 Phase 2 Strosburge. Total says it will not proce	December 2008. 65,000 152,000 152,000 D. menco Energy withdreved Synenco in August 2 50,600 50,600	v the Northern L	Cancelled Cancelled Lights upgrade Cancelled Cancelled	Upgrader Upgrader r application in Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Department (UE-1) VALUE CREATION INC. Euro de Grace Phase 1 Phase 2 Pilot SOUTH ATHABASC NEXEN INC. Lung	75,000 75,000 75,000 100,000 33,600 33,600 8,400 A REGION	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	Announced Announced Approved A D E R t continues to exquigitation of the State of	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LI Insthum Lists. Previous project owner Sy June 2008. Total purchase Phase 1 Phase 2 Strophone. Total says it will not proceed the purchase phase 1	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 20,600 138,000 138,000	v the Northern L	Cancelled Cancelled Cancelled Cancelled Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 1 Debattlecking Phose 1 Phose 2 Pilot SOUTH ATHAE ASC NEXEN INC. Long Laim Although the bitumen productional difficulties, portner consistently. Despite a brief interconsistently.	75,000 75,000 100,000 33,600 3,600 8,400 A REGION	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	mpletion of the S maintenance. Operating Announced Operating Announced Announced Announced Approved A D £ R	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LE Instrum Library Previous project owner 5) June 2008. Total purchase 1 Phase 1 Phase 2 Strotboom Total says it will not proced be bottlenecking Phase 1 Phase 2	December 2008. 65,000 152,000 152,000 P. Interior Energy withdrever and Synenco in August 20 50,600 50,600 seed with its Strathcona 46,000	v the Northern L	Cancelled Cancelled Lights upgrade Cancelled Cancelled	Upgrader Upgrader upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlecking Stage 3 Debottlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. First de Grace Phase 1 Phase 2 Pilot S O UT H AT H A B A S C NEXEN INC. Lung Limb Although the bitumen product operational difficulties, partner consistently, Despite a brief intoveraged 90 per cent for the for Phase 1	75,000 75,000 75,000 100,000 33,600 33,600 8,400 A REGION correction in Nove unth quarter, up for 58,500	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	Announced Announced Approved A D E R t continues to equiparder units at gasifier trip, on-sit in the third. Operating	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LI Interhain Libra. Previous project owner 5) June 2008. Total purchase Phase 1 Phase 2 Stroib-curse. Total says it will not proce Debottlenecking Phase 1 Phase 2 VALUE CREATION INC.	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 2eed with its Strathcona 46,000 138,000 87,000	with Northern L	Cancelled Cancelled Cancelled Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Emission of Grace Phase 1 Phase 2 Pilot SOUTH ATHAEASC NEXEN INC. Lung Limb Although the bitumen product operational difficulties, partner consistently, Despite a brief intoveraged 90 per cent for the for Phase 1 Phase 2 Phase 2	75,000 75,000 75,000 100,000 33,600 33,600 8,400 A REGION correction in Nove urth quarter, up fr	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	Announced Announced Approved A D E R t continues to equiparder units at gasifier trip, on-sit in the third. Operating	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LE Introduction project owner Stylune 2008. Total purchase Phase 1 Phase 2 Stroit-community in will not proceed by the Stylune Stylune CREATION INC.	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 46,000 138,000 87,000	with Northern L	Cancelled Cancelled Cancelled Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Emissions Reduction Project, to Base Plant Stage 1 & 2 Debattlenecking Stage 3 Debattlecking Stage 3 Debattlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Berne de Grace. Phase 1 Phase 2 Pilot SOUTH ATHAEASC NEXEN INC. Lung Labor Although the bitumen product operational difficulties, partner consistently, Despite a brief intoveraged 90 per cent for the for Phase 1 Phase 2 Phase 2 Phase 3	75,000 75,000 75,000 100,000 33,600 33,600 8,400 A RECTON COPTI Canada is rerruption in Noverourth quarter, up fr. 58,500 58,500	mine trains, contained trained trains, contained trained trains, contained trained trains, contained trained trains, contained trains, con	Announced Approved A D E R t continues to expugrader units or gasting to inche third. Operating Announced Approved Approved Approved Approved Approved Approved Announced, approved Announced, approved Announced, approved	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LI Interhain Libra. Previous project owner 5) June 2008. Total purchase Phase 1 Phase 2 Stroib-curse. Total says it will not proce Debottlenecking Phase 1 Phase 2 VALUE CREATION INC.	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 46,000 138,000 87,000	with Northern L	Cancelled Cancelled Cancelled Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlenecking Stage 3 Debottlecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Furne de Grace Phase 1 Phase 2 Pilot S O UT H AT H A B A S C NEXEN INC. Lung Limb Although the bitumen product operational difficulties, partner consistently, Despite a brief intoveraged 90 per cent for the for Phase 1 Phase 2 Phase 3 Phase 4	75,000 75,000 75,000 100,000 33,600 33,600 8,400 A RECTON COPTI Canada is rerruption in Noverourth quarter, up fr. 58,500 58,500	ng Lake projecte porting the to a command to the co	Announced Approved A D E R t continues to expugrader units or gasting to inche third. Operating Announced Approved Approved Approved Approved Approved Approved Announced, approved Announced, approved Announced, approved	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA LE Introduction project owner Stylune 2008. Total purchase Phase 1 Phase 2 Stroit-community in will not proceed by the Stylune Stylune CREATION INC.	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 46,000 138,000 87,000	with Northern L	Cancelled Cancelled Cancelled Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader
the relocation or replacement of Emissions Reduction Project, to Base Plant Stage 1 & 2 Debottlenecking Stage 3 Debottlenecking Stage 3 Debottlenecking Stage 3 Expansion (UE-1) VALUE CREATION INC. Turns de Grace Phase 1 Phase 2 Pilot SOUTH ATHABASC NEXEN INC. Long Long Although the bitumen product operational difficulties, partner consistently. Despite a brief intoveraged 90 per cent for the for Phase 1 Phase 2 Phase 2 Phase 3 Phase 3 Phase 4 VALUE CREATION INC.	illings manageme 250,000 75,000 100,000 33,600 33,600 8,400 A RECTON ion side of the Lor r OPTI Canada is r erruption in Nove runth quarter, up fr 58,500 58,500 58,500	mine trains, contains, con	Announced Approved A D E R t continues to expupgrader units a gasifier trip, on- at in the third. Operating Announced Announced Approved A D E R	Upgrader	Application withdrawn in Phase 1 Phase 2 TOTAL EAP CANADA IT Interest Inter	December 2008. 65,000 152,000 152,000 152,000 152,000 50,600 50,600 50,600 138,000 87,000 87,000	with Northern Loos.	Cancelled Cancelled Lights upgrade Cancelled Cancelled Application Approved	Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader Upgrader



API

An American Petroleum Institute measure of liquid gravity. Water is 10 degrees API, and a typical light crude is from 35 to 40. Bitumen is 7.5 to 8.5.

The traditional measurement for crude oil volumes. One barrel equals 42 US gallons (159 litres). There are 6.29 barrels in one cubic metre

Bitumen

Naturally occurring, viscous mixture of hydrocarbons that contains high levels of sulphur and nitrogen compounds. In its natural state, it is not recoverable at a commercial rate through a well because it is too thick to flow. Bitumer typically makes up about 10 per cent by weight of oilsand, but saturation varies,

Mixture of extremely light hydrocarbons recoverable from gas reservoirs. Condensate is also referred to as a natural gas liquid, and is used as a diluent to reduce bitumen viscosity for pipeline transportation.

Cyclic steam stimulation

For several weeks, high-pressure steam is injected into the formation to soften the oilsand before being pumped to the surface for separation. The pressure created in the underground environment causes formation cracks that help move the bitumen to producing wells. After a portion of the reservoir has been saturated, the steam is turned off and the reservoir is allowed to soak for several weeks. Then the production phase brings the bitumen to the surface.

The heaviness of crude oil, indicating the proportion of large, carbon-rich molecules, generally measured in kilograms per cubic metre (kg/m²) or degrees on the American Petroleum Institute (API) gravity scale; in western Canada, oil up to 900 kg/m² is considered light to medium crude - oil above this density is deemed as heavy oil or bitumen.

see Condensate

Established recoverable reserves

Reserves recoverable under current technology and present and anticipated economic conditions, plus that portion of recoverable reserves that is interpreted to exist, based on geological, geophysical, or similar information, with reasonable certainty.

Established reserves

Reserves recoverable with current technology and present and anticipated economic conditions specifically proved by drilling, testing, or production, plus the portion of contiguous recoverable reserves that are interpreted to

exist from geological, geophysical, or similar information with reasonable certainty.

A process, unique to the oil sands industry, which separates the bitumen from the oilsand using hot water, steam, and caustic soda.

Froth treatment

The means to recover bitumen from the mixture of water, bitumen, and solids "froth" produced in hot water extraction (in mining-based recovery).

A process to partially oxidize any hydrocarbon, typically heavy residues, to a mixture of hydrogen and carbon monoxide. Can be used to produce hydrogen and various energy byproducts.

Greenhouse gases

Gases commonly believed to be connected to climate change and global warming. CO_2 is the most common, but greenhouse gases also include other light hydrocarbons (such as methane) and nitrous oxide.

Initial established reserves

Established reserves prior to the deduction of any production.

Initial volume in place

The volume calculated or interpreted to exist in a reservoir before any volume has been produced.

Latin for "in place." In situ recovery refers to various methods used to recover deeply buried bitumen deposits.

In situ combustion

A displacement enhanced oil recovery method. It works by generating combustion gases (primarily CO and CO₂) downhole, which then "pushes" the oil towards the recovery well.

A legal document from the province of Alberta giving an operator the right to extract bitumen from the oilsand existing within the specified lease area. The land must be reclaimed and returned to the Crown at the end of operations.

A water-soaked layer of decaying plant material, one to three metres thick, found on top of the overburden.

Bitumen-soaked sand, located in four geographic regions of Alberta: Athabasca, Wabasca, Cold Lake, and Peace River. The Athabasca deposit is the largest, encompassing more than 42,340 square kilometres. Total deposits of bitumen in Alberta are estimated at 1.7 trillion to 2.5 trillion barrels.

A layer of sand, gravel, and shale between the surface and the underlying oilsand. Must be removed before oil sands can be mined. Overburden underlies muskeg in many places.

Pilot plant

Small model plant for testing processes under actual production conditions

Proven recoverable reserves

Reserves that have been proven through production or testing to be recoverable with existing technology and under present economic conditions

Reclamation

Returning disturbed land to a stable, biologically

productive state. Reclaimed property is returned to the province of Alberta at the end of

Remaining established reserves

Initial reserves less cumulative production.

The Crown's share of production or revenue About three quarters of Canadian crude oil is produced from lands, including the oil sands, on which the Crown holds mineral rights. The lease or permit between the developer and the Crown sets out the arrangements for sharing the risks and rewards.

Steam assisted gravity drainage (SAGD)

An in situ production process using two closely spaced horizontal wells: one for steam injection and the other for production of the bitumen/ water emulsion

Synthetic crude oil

A manufactured crude oil comprised of naphtha, distillate, and gas oil-boiling range material. Can range from high-quality, light sweet bottomless crude to heavy, sour blends.

A combination of water, sand, silt, and fine clay particles that is a byproduct of removing the bitumen from the oilsand.

Tailings settling basin

The primary purpose of the tailings settling basin is to serve as a process vessel allowing time for tailings water to clorify and silt and clay particles to settle, so the water can be reused in extraction. The settling basin also acts as a thickener, preparing mature fine tails for final reclamation

Thermal recovery

Any process by which heat energy is used to reduce the viscosity of bitumen in situ to facilitate recovery.

Toe to heel air injection (THAI)

An in situ combustion method for producing heavy oil and oilsand. In this technique combustion starts from a vertical well, while the oil is produced from a horizontal well having its toe in close proximity to the vertical air-injection well. This production method is a modification of conventional fire flooding techniques in which the flame front from a vertical well pushes the oil to be produced from another vertical well.

Truck-and-shovel mining

Large electric or hydraulic shovels are used to remove the oilsand and load very large trucks. The trucks haul the oilsand to dump pockets where it is conveyed or pipelined to the extraction plant. Trucks and shovels are more economic to operate than the bucket-wheel reclaimers and draglines they have replaced at oil sands mines.

The process of converting heavy oil or bitumen into synthetic crude either through the removal of carbon (coking) or the addition of hydrogen (hydroconversion)

Vapour extraction (VAPEX)

VAPEX is a non-thermal recovery method that involves injecting a gaseous hydrocarbon solvent into the reservoir where it dissolves into the sludge-like oil, which becomes less viscous (or more fluid) before draining into a lower horizontal well and being extracted.

The ability of a liquid to flow. The lower the viscosity, the more easily the liquid will flow.

CONTACTS

Oil Sands Producers

- Alberta Oilsands
- **Albian Sands Energy**
- Andora Energy

- Athabasca Oil Sands
- **Baytex Energy**
- Canadian Natural Resources
- · Cenovus Energy Chevron Conoda
- · Connacher Oil and Gas
- · ConocoPhillips Canada
- Devon Canada
- Enerplus Resources Fund
- E-T Energy
- · Excelsior Energy
- · Husky Energy
- Imperial Oil
- Ivanhoe Energy
- · Japan Canada Oil Sands
- **Korea National Oil Corporation**
- · Laricina Energy
- · Marathon Oil
- MEG Energy
- North Peace Energy
- **North West Upgrading**
- · N-Solv
- · Occidental Petroleum Corporation www.oxy.com
- Oilsands Quest
- · OPTI Canada
- **OSUM Oil Sands**
- **Pan Orient Energy**
- **Patch International**
- **Pengrowth Energy Trust**
- Petro-Canada
- **Petrobank Energy and Resources**
- Shell Canada
- Southern Pacific Resource
- Statoil Canada

- www.ahoilsands.ca
- www.albiansands.ca www.andoroenergy.com
- www.nosc.com
- www.baytex.ab.ca
- www.cnrl.com
- www.cenovus.com
- www.chevron.ca
- www.connacheroil.com
- www.conocophillips,ca
- www.dvn.com
- www.enerplus.com
- www.e-tenergy.com
- www.excelsiorenergy.com www.huskyenergy.ca
- www.imperialoil.ca www.ivanhoe-energy.com
- www.jacos.com
- www.knoc.co.kr
- www.laricinaenergy.com
- www.marathon.com
- www.megenergy.com
- www.nexeninc.com
- www.northpec.com
- www.northwestupgrading.com
- www.n-solv.com
- www.oilsandsquest.com
- www.opticanada.com
- www.osumcorp.com
- www.panorient.co
- www.patchenergy.com
- www.pengrowth.com
- www.petro-canada.com
- www.petrobank.com
- www.shell.ca
- www.shpocific.com
- www.statoil.com

- Suncor Energy
- Sunshine Oilsands
- Syncrude
- Talisman Energy
- · Teck Cominco
- · Total E&P Canada
- . UTS Energy
- Value Creation Group
- www.suncor.com
- www.sunshineoilsands.com
- www.syncrude.ca
- www.talisman-energy.com
- www.teckcominco.com
- www.total-ep-canada.com
- www.uts.co
- www.vctek.com

Associations/Organizations

- Alberta Building Trades Council
- Alberta Chamber of Resources
- Alberta Chambers of Commerce
- · Alberta Energy Alberta Energy Research Institute
- Alberta Environment Alberta Finance and Enterprise
- · Alberta Research Council
- Alberta's Industrial
- Heartland Association
- Canadian Association of **Geophysical Contractors**
- Canadian Association of
- Petroleum Producers
- Canadian Heavy Oll Association
- Canadian Oil Sands Network for
- **Research and Development**
- Energy Resources Conservation
- · In Situ Oil Sands Alliance
- Lakeland Industry and Community
- Association Natural Resources Conservation Roard
- Oil Sands Developers Group
- · Oil Sands Leadership Initiative
- · Petroleum Technology Alliance Canada

- www.albertabuildingtrades.com
- www.acr-alberta.com www.abchamber.ca
- www.energy.gov.ab.ca
- www.aeri.ab.ca
- www.environment.alberta.ca
- www.finance.gov.ab.ca www.arc.ab.ca

www.industrialheartland.com

www.cagc.ca

www.capp.ca www.choa.ab.ca

www.conrad.ab.ca

www.ercb.ca

www.iosa.ca

www.lica.ca

www.nrcb.gov.ab.ca www.oilsandsdevelopers.ca

www.osli.ca www.ptac.org

For more information, visit us at www.albertacanada.com